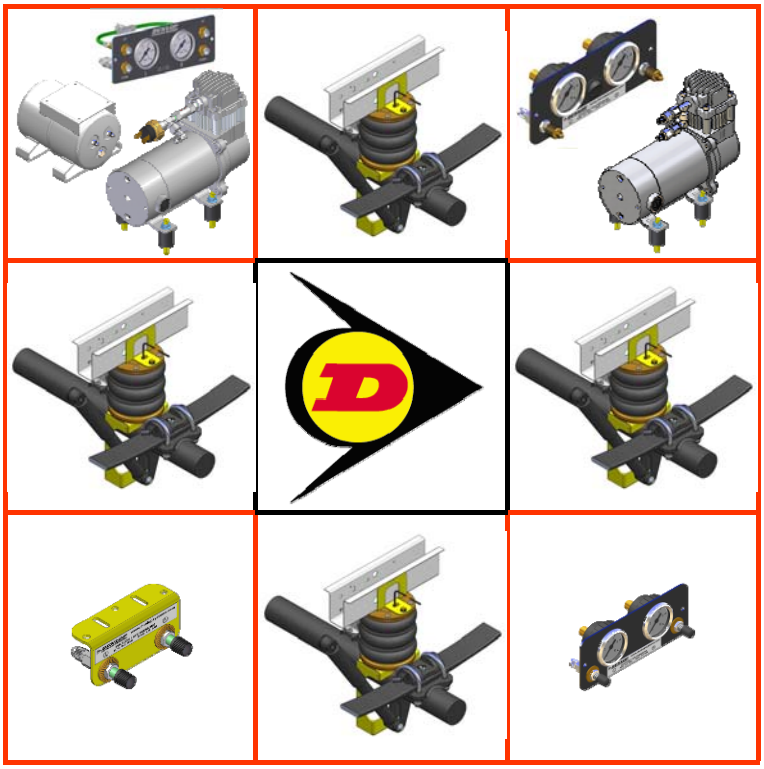
Installation Manual

L.TRA.EAS.C.M (RWD Single Tire)

Ford Transit 300-460, 2006 to Present



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1. FOREWORD

This manual provides instructions for the installation of an auxiliary air suspension kit, developed specifically for the Ford Transit Rear Wheel Drive Single Tire (2006—onwards). To ensure correct installation of the kit, it is strongly recommend that these instructions are read thoroughly before commencing any installation work. Installation should only be carried out by a suitably qualified mechanic or specialist installation facility. Dunlop Systems and Components will not accept any responsibility for faults or defects arising from incorrect installation, which automatically renders the guarantee invalid.

IMPORTANT : Manufacturer's Declaration Form

A manufacturer's declaration form is provided with your kit. Following installation of the kit please ensure that this form is completed and signed by a qualified fitter and a copy is returned to Dunlop Systems and Components by post, fax or e-mail.

2. INTRODUCTION

Thank you for choosing an auxiliary air suspension kit from the range offered by *Dunlop Systems and Components*. Auxiliary air suspension is fitted in tandem with the standard steel springs of the vehicle suspension, and provides enhancements in terms of both the stability of the vehicle and the comfort of the passengers…

Vehicle Levelling

Simply by varying the air pressure in the springs, the vehicle can be levelled both front-to-rear and side-to-side. Keeping the vehicle level optimises stability, ensures correct headlamp beam distribution and reduces tyre wear arising from uneven distribution of weight.

Straight Line Stability

Straight line stability is greatly increased at higher speeds, and when subjected to buffeting from cross-winds or large overtaking vehicles.

Reduced Body Roll

Body roll when cornering or negotiating roundabouts is significantly reduced.

Fatigue Reduction and Wear Compensation

Suspension fatigue is reduced, so helping to prevent leaf springs from sagging under repeated or constant loading.

Any sagging already present can be compensated-for. This is a particular benefit for motorhomes, which are always fully laden.

Ride Comfort

Air springs help to absorb shock loads from uneven road surfaces, therefore general ride quality is much improved.

3. VERY IMPORTANT NOTES

Gross Vehicle Weight (GVW)

Air assist kits are not in themselves designed to increase the gross vehicle weight (GVW) rating of a vehicle. They do not legally allow for carriage of a load greater than the carrying capacity stated on the data plate of the vehicle.

Do not exceed the maximum load specified by the vehicle manufacturer…

- to avoid compromising passenger safety
- to prevent possible damage to the vehicle
- for legal reasons

Vehicle Uprating

Despite the above words of caution, it is possible to upgrade the weight rating of your vehicle. This must be carried-out by a specialist supplier that will…

- carry out any necessary modifications in addition to fitting the air assist kit
- complete documentation as necessary to inform the Vehicle and Operator Services Agency (*VOSA*) – a mandatory requirement
- supply and fit a new weight plate to replace the original plate supplied with the vehicle

This process applies to United Kingdom registered vehicles. The process in other countries may be different.

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Safety Guidance Note

The following very useful guidance note is available for free download from the *Health and Safety Executive* (HSE)…

PM85, July 2007 *Safe recovery (and repair) of buses and coaches fitted with air suspension*

The uniform resource locator (URL) for this document is…

http://www.hse.gov.uk/PUBNS/pm85.pdf

4. INSTRUCTIONS FOR INSTALLATION

Preparation and Precaution

Before beginning installation, ensure that you have sufficient clearance between the axle and the chassis. Use a jack if necessary. Install at one side of the vehicle at a time.

Pay attention to your safety at all times during installation - always use axle stands to support the vehicle!

Recommended Tightening Torque

During fitting of the air suspension system, it is recommended that nuts and bolts are tightened in accordance with the following table...

METRIC TORQUE CHART IN N.m		
SIZE	CLASS 8.8	CLASS 10.9
M6 x 1	9.9	14.0
M8 x 1.25	24.0	34.0
M10 x 1.5	48.0	67.0
M12 x 1.75	83.0	117.0
M16 x 2	200.0	285.0

- When both the bolt and nut are made from steel use either class 8.8 or 10.9
- For all other materials, tightening torque is left to the discretion of a person skilled in the art

The following instructions make reference to the diagrams on pages 14 to 17 inclusive.

4.1 Removal of Bump Stop and Installation of Upper Mounting Bracket

i. Unscrew and remove the bump stop hanging from the chassis - Figures 2 to 4

ii. Attach the upper mounting bracket to the chassis using a single M10 x 30 bolt and spring washer, with the vertical 'arched' portion of the bracket on the outside of the chassis - Figure 5 and 6.

4.2 Attachment of Bellow to Lower Mounting Bracket

i. See Section 4.6 - "*Tube Connection and Disconnection, Cutting and Routing*" : Connect a tube to the bellow by pushing the tube into the air inlet port on the upper side of the spring and then hand-rotating the tube by one screw turn - Figures 1 and 2. Use black tubing for the left-hand bellow and blue for the right-hand bellow. Compress the bellow and then bung the tube to hold it in the compressed state - Figure 7

ii. Attach the bellow to the lower mounting bracket using 2-off M8 x 16 bolts with spring washers. Do not fully tighten the bolts at this stage - Figure 8.

4.3 Attachment of Lower Bracket to Axle Assembly

i. Unscrew and temporarily remove the nut from the bolt securing the shock absorber at the bottom - Figures 9 and 10

ii. Place the bellow/lower bracket onto the axle assembly such that the shock absorber lower bolt engages with the slotted hole near the base of the lower bracket - Figures 11 and 12

iii. Replace the nut but do not tighten it at this stage - Figure 13

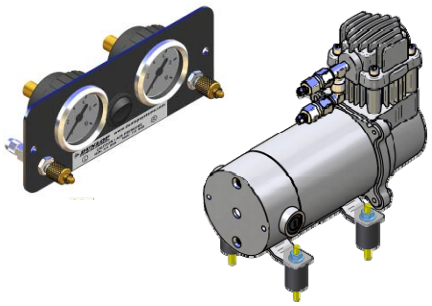
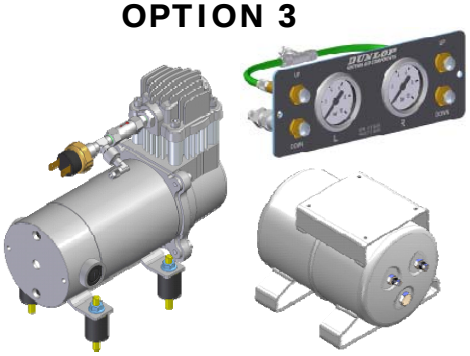
4.4 Attachment of the Bellow to the Upper Bracket

i. Feed the tubing through the larger of the holes in the upper bracket - Figure 14

ii. Remove the bung to enable the bellow to expand upwards to the upper bracket, taking care to guide the tubing during this process so that it does become trapped between the bellow top plate and the upper bracket - Figure 15

iii. Attach the bellow to the upper mounting bracket using 2-off M8 x 16 bolts with spring washers. Do not fully tighten the bolts at this stage - Figures 16 and 17.

4.5 Fitting of Inflator Console

STANDARD	OPTION 1
OPTION 2	**OPTION 3**
	

Your kit is supplied with one of the inflator console options shown above…

- **STANDARD** : Two valves and a small bracket
- **OPTION 1** : Two valves in a console with two independent 10-bar pressure gauges
- **OPTION 2** : Two valves in a console with two independent 10-bar pressure gauges and a rocker on/off switch to operate the electric motor driven air compressor
- **OPTION 3** : Four valves (two for raising the vehicle (’UP’) and two for lowering the vehicle (’DOWN’)) in a console with two independent 10-bar pressure gauges. A pressure switch operates the electric motor driven air compressor to keep the air reservoir of 2.2-litre at pressure.

A special dashboard panel is available for ***OPTION 1*** and ***OPTION 2***

Mount the console in a position of your choice whereby it is firmly fixed, has some protection from the environment (particularly important for the console with gauges) and is easily accessible. Suggested possible locations include...

'Standard' Console...

- on the rear bumper
- at the rear beside the license plate
- on the chassis next to a rear wheel
- in a service shutter (motorhomes)
- beside the fuel cap

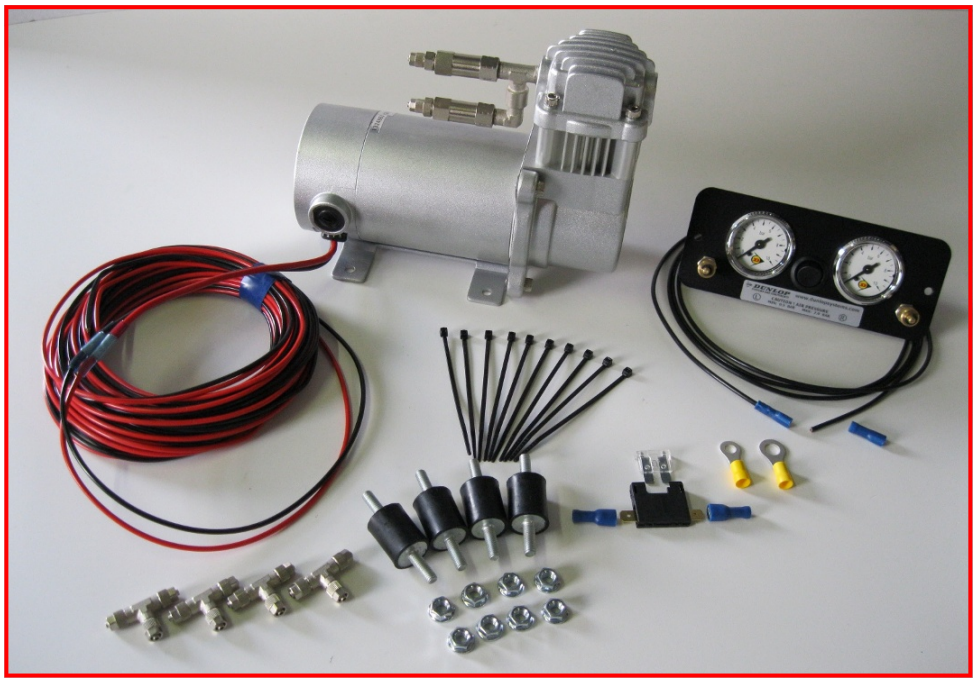
'Option 1', 'Option 2' or 'Option 3' Console...

- in the vehicle cabin, within reach and sight of the driver
- Beside, under the driver seat
- in the wall of a cupboard (motorhomes)
- in a service shutter (motorhomes)

'Comfort' Packages

The 'Option 2' and 'Option 3' panels, as shown above, are each part of a *Comfort Package* that is supplied with a compressor (and also an air reservoir in the case of the 'Option 3' panel) for ease of spring inflation and ride height setting. For further information please ask your dealer.

The photograph below shows all of the parts of Comfort Package 'Option 2'...

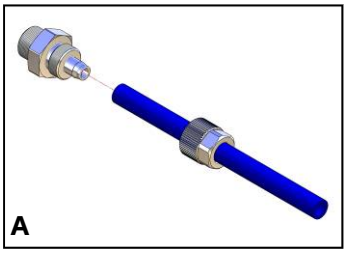


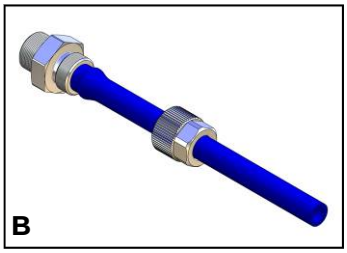
Comfort Package 'Option 2'

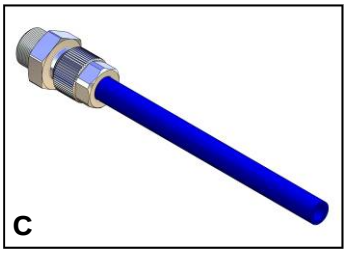
4.6 Tube Connection and Disconnection, Cutting and Routing

Connection and Disconnection

Tubes are connected as shown by the diagrams below...







A. Slide a nut over the end of the tube

B. Push the tube onto the connector as far as possible

C. Feed the nut up to the connector, fully tighten by hand and finally tighten one additional turn using spanners

Cutting

To achieve good sealing and air-tight fitting of tube ends to their connecting parts, it is very important to cut tubing cleanly and squarely. A dedicated guillotine action tubing cutter is recommended, or a craft knife if such a tool is not available. Do not use electrician's side cutters.

A dedicated tubing cutter - **Recommended**

Electrician's Side Cutters **NOT Recommended**

Routing

Study the underside of the vehicle and decide how to route each branch of the air circuit…

- To minimise the risk of chafing, avoid running tubing over metal edges as much as possible
- Avoid close proximity to heat sources such as the exhaust assembly
- Choose a route that provides as much protection as possible from dirt, debris and any solid objects that may impact the underside of the vehicle

It is recommended that tubes are guided alongside brake lines as much as possible.

Use cable ties (‘tie wraps’) to secure tubing to the chassis, taking care not to over-tighten them.

4.7 Spring Inflation

Once installation of the air assist kit is complete, inflate the springs to achieve the desired ride height via the inflator console taking careful note of the following...

Maximum and Minimum Pressure

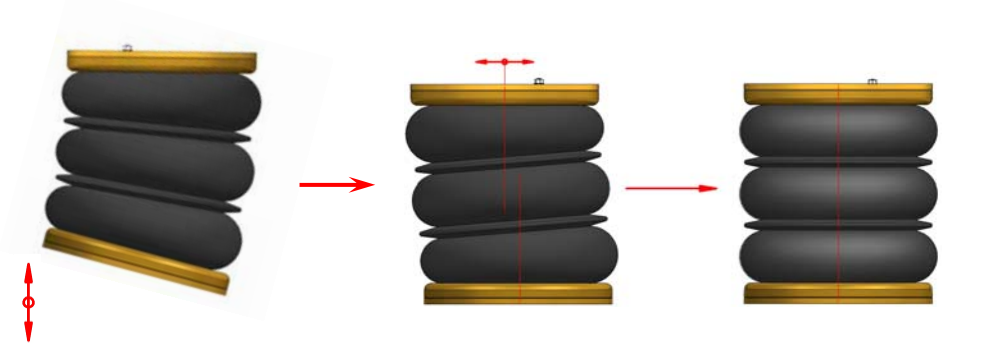
Maximum Pressure 7.0bar **Minimum Pressure 0.5bar**

Do not exceed 7.0bar (101psi), which is the recommended maximum charge pressure for the air springs.

The springs may be deflated if the vehicle is to be stored for a lengthy period without use, but a pressure of at least 0.5bar (7.25psi) should be maintained at all times in order to avoid possible compression damage to the springs.

With the vehicle standing at the desired ride height, it is recommended that the height of the bellow itself should be between 18cm and 22cm.

4.8 Spring Alignment



Spring out of alignment mounting plate is at an angle.

Spring out of alignment mounting plate axes offset

Spring in alignment mounting plates parallel and coaxial

i. Adjust the lower bracket such that its top face is parallel to the underside of the chassis, then tighten the nut that secures the bracket to the shock absorber lower mounting bolt

ii. With the vehicle standing at the desired ride height, ensure that the springs are correctly aligned as illustrated above and then tighten the bolts to secure the bellow to both the upper and the lower mounting brackets.

iii. Always check if the air bellow won't touch any obstacle

4.9 Maintenance

Following installation, it is recommended that all metal parts are coated with a protective substance such as body wax.

The system does not require very much maintenance other than…

- to maintain air pressure in the springs. Much like a tyre, the system may lose a little air over time.
- to keep the air bellows clean. It is suggested that, when washing the vehicle, the bellows are inspected and cleaned as necessary (preferable by spraying). Look in particular for stones or grit trapped between convolutes, as this may damage the bellow.
- Check before and after the winter period the wax coating. Re-wax when necessarily

4.10 Check List

Before driving the vehicle following completion of installation of the auxiliary air suspension system, please check...

...all bolts tightened to the recommended torque (Page 7)? ☐

...air springs set in alignment (Section 4.8)? ☐

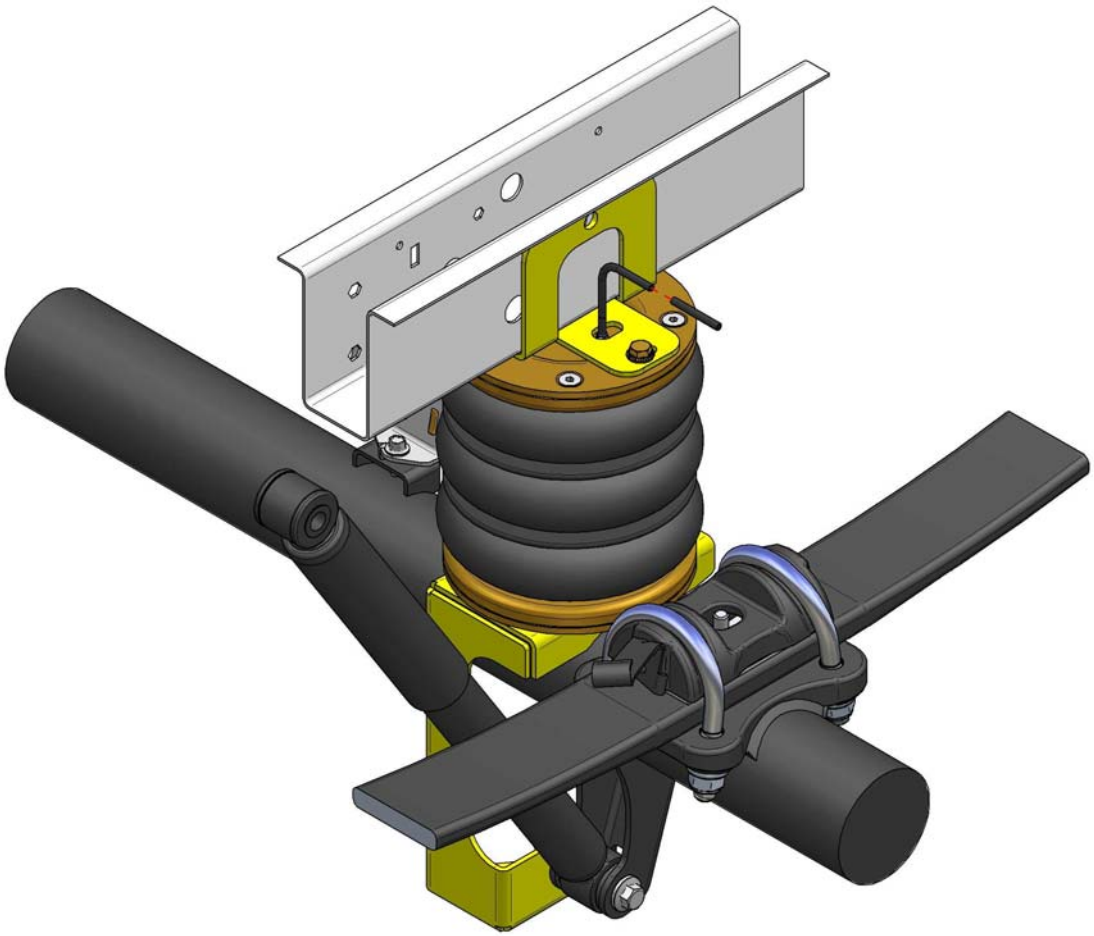
...enough free space around the air springs to avoid wearing? ☐

...all metal parts wax coated (Section 4.9)? ☐

...manufacturer's declaration form completed and a copy returned? ☐

A wait of 24 hours is recommended in order to ensure that the vehicle has maintained its stance and that there are no air leaks present.

4.11 Installation Drawings



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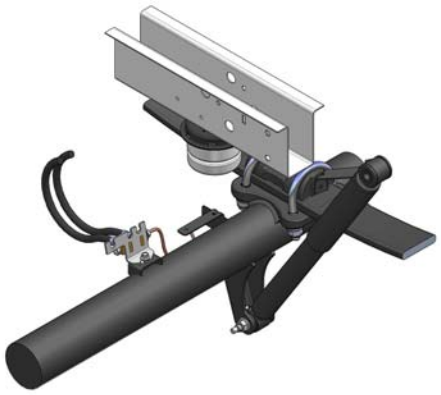
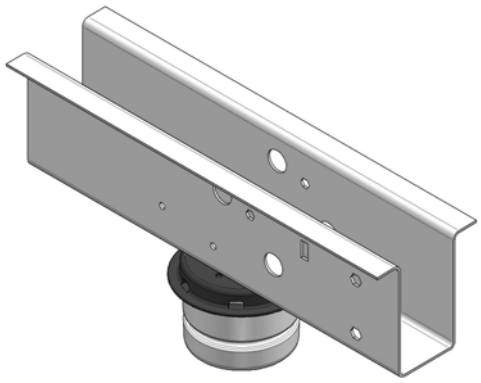
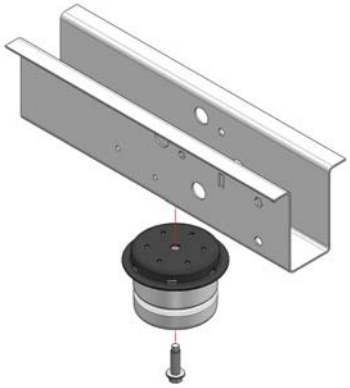
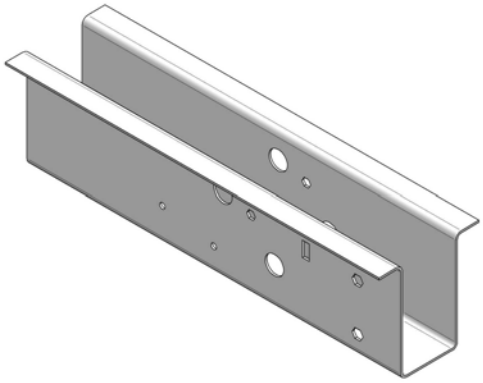
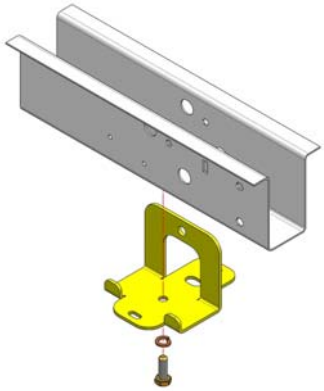
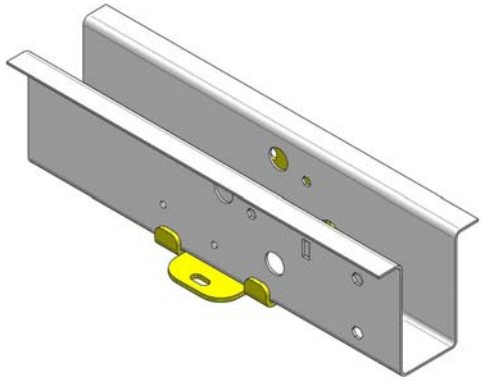
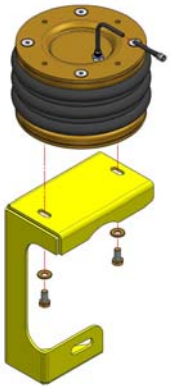
1 	2 
3 	4 
5 	6 
7 	8

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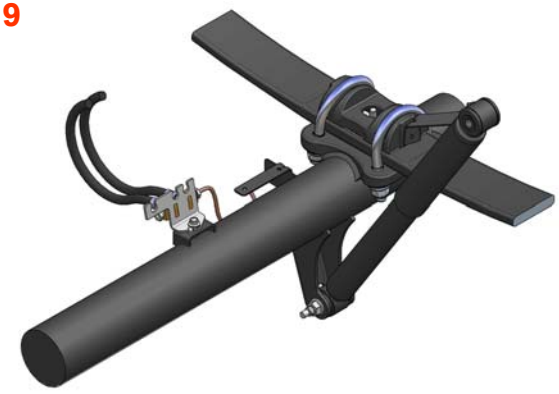

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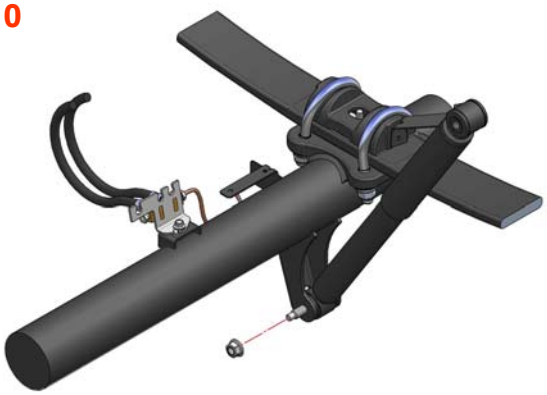

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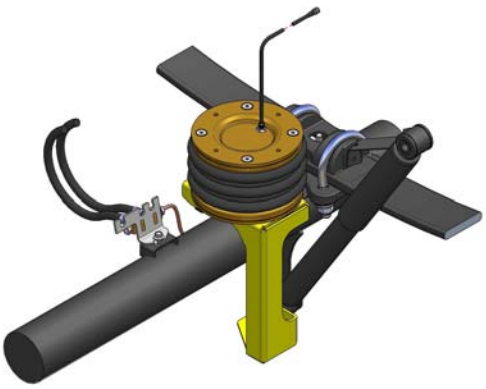

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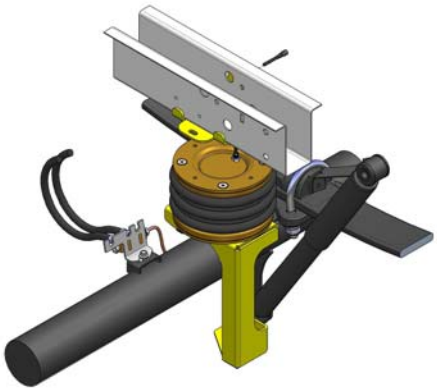

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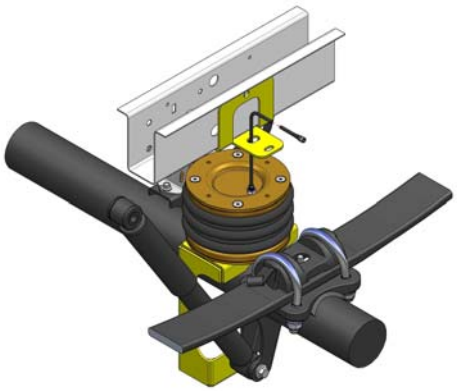

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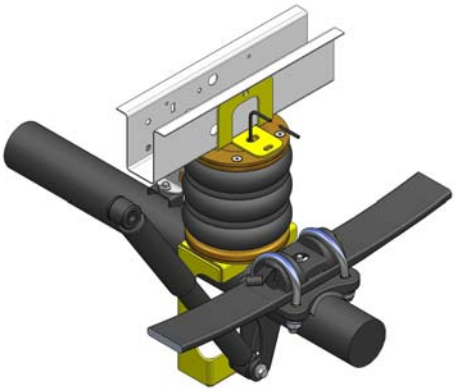

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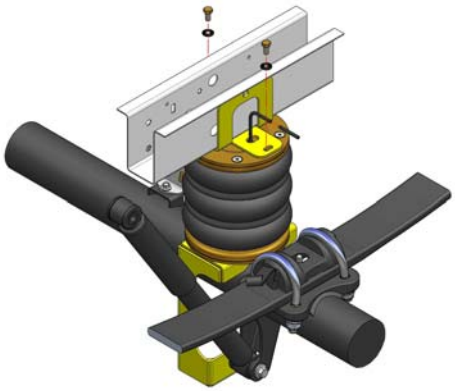

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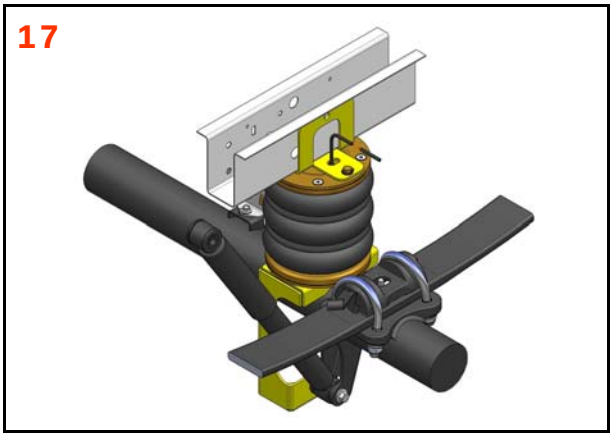

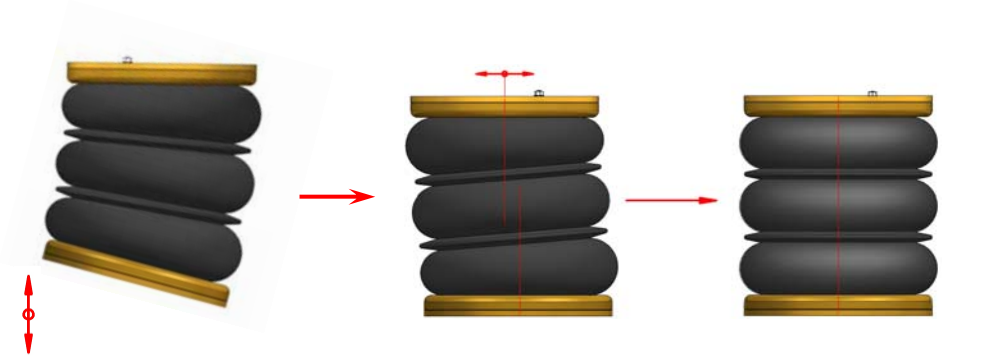

Spring out of alignment mounting plate is at an angle.

Spring out of alignment mounting plate axes offset

Spring in alignment mounting plates parallel and coaxial

CAUTION!

Before fully tightening the bolts that secure the air spring to the upper and lower brackets, set the vehicle at ride height (spring height ideally between 18cm and 22cm) and ensure that the springs are correctly aligned.

5. EPILOGUE

Dunlop Systems and Components hopes that you enjoy the benefits that your air suspension system will provide for you. To ensure optimal performance, we advise that you have your system checked frequently by qualified personnel. As recommended in the fitting instructions, it is important to coat all the steel parts with a protective substance such as body wax.

IMPORTANT : Manufacturer's Declaration Form

A manufacturer's declaration form is provided with your kit. Following installation of the kit please ensure that this form is completed, signed by a qualified fitter and a copy is returned to Dunlop Systems and Components.

As a condition of your warranty, modifications to the system may only be carried out by personnel of Dunlop Systems and Components.

Enquiries

For general enquiries please either telephone…

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